CSN Network Assessment

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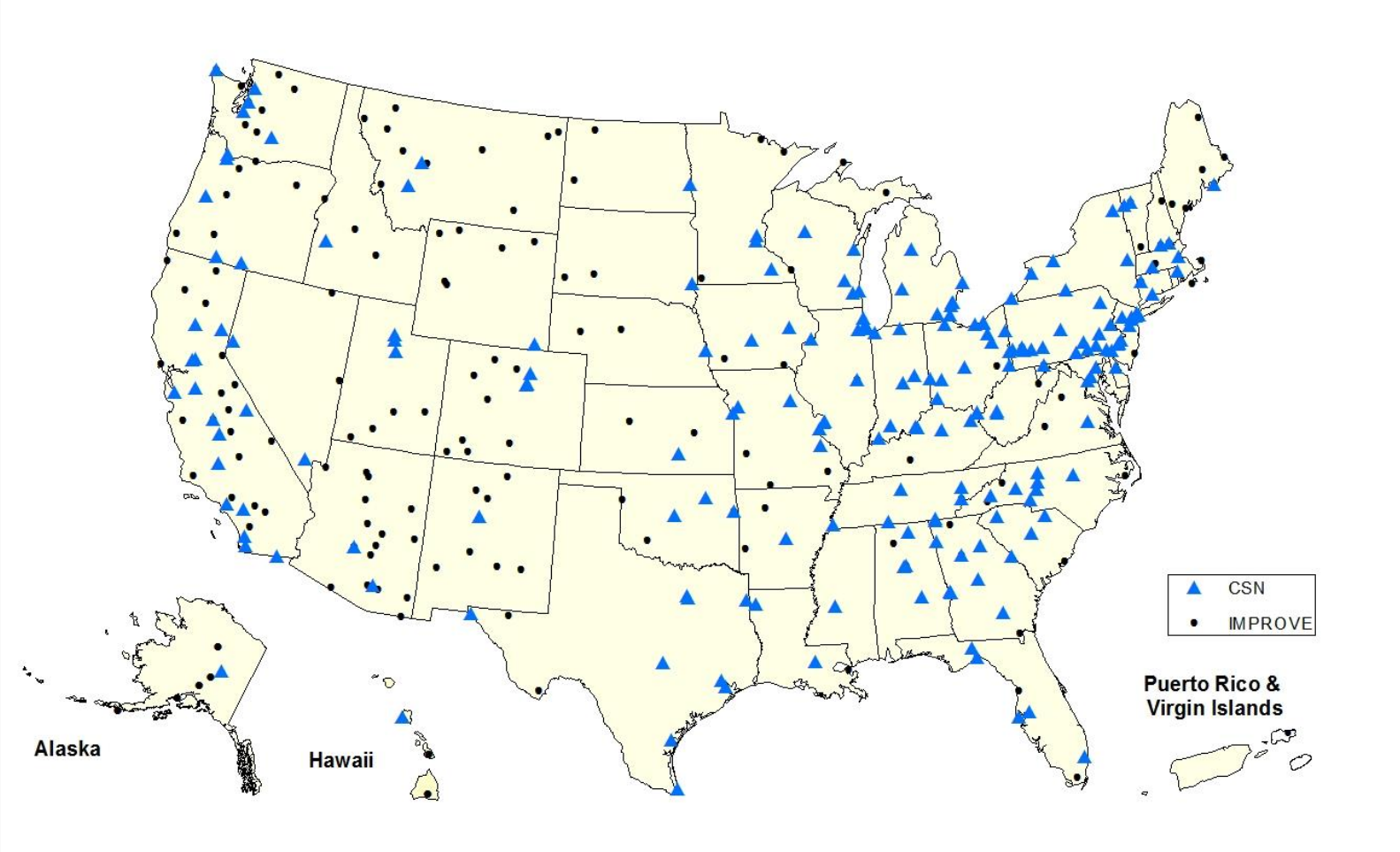
Network Overview

- 1997 $PM_{2.5}$ NAAQS review led to the establishment of the Chemical Speciation Network (CSN)
- Initial monitoring began with 13 pilot sites in 2000
- Currently, the network consists of 189 sites:
  - 52 Speciation Trends Network (STN) sites
  - 137 supplemental sites
  - *174 sites utilize EPA's national contract and were considered in the network assessment*
- Sites collect aerosol samples of 24 hours on filters analyzed for:
  - $PM_{2.5}$ mass
  - Elements
  - Ions (sulfate, nitrate, sodium, potassium & ammonium)
  - Organic and elemental carbon (OC/EC)

Speciation Networks – CSN & IMPROVE



Goals of the Assessment

- Create a CSN network that is financially sustainable going forward
- Redistribute resources to new or high priorities from those of low-priority or low-benefit
- Extract more value from the existing network

- Fully leverage the value of other existing networks (e.g., IMPROVE)

CSN Cost Breakdown

- Current network cost ≈ $6.7 million
- **Goal** of 30% cut, 10% reinvestment (total reduction of 20%)
  - 30% cut ≈ $2M
  - 10% reinvestment ≈ $670,000
  - 20% total reduction ≈ $1.34M

- Total to spend on base network ≈ **$4.7 million**

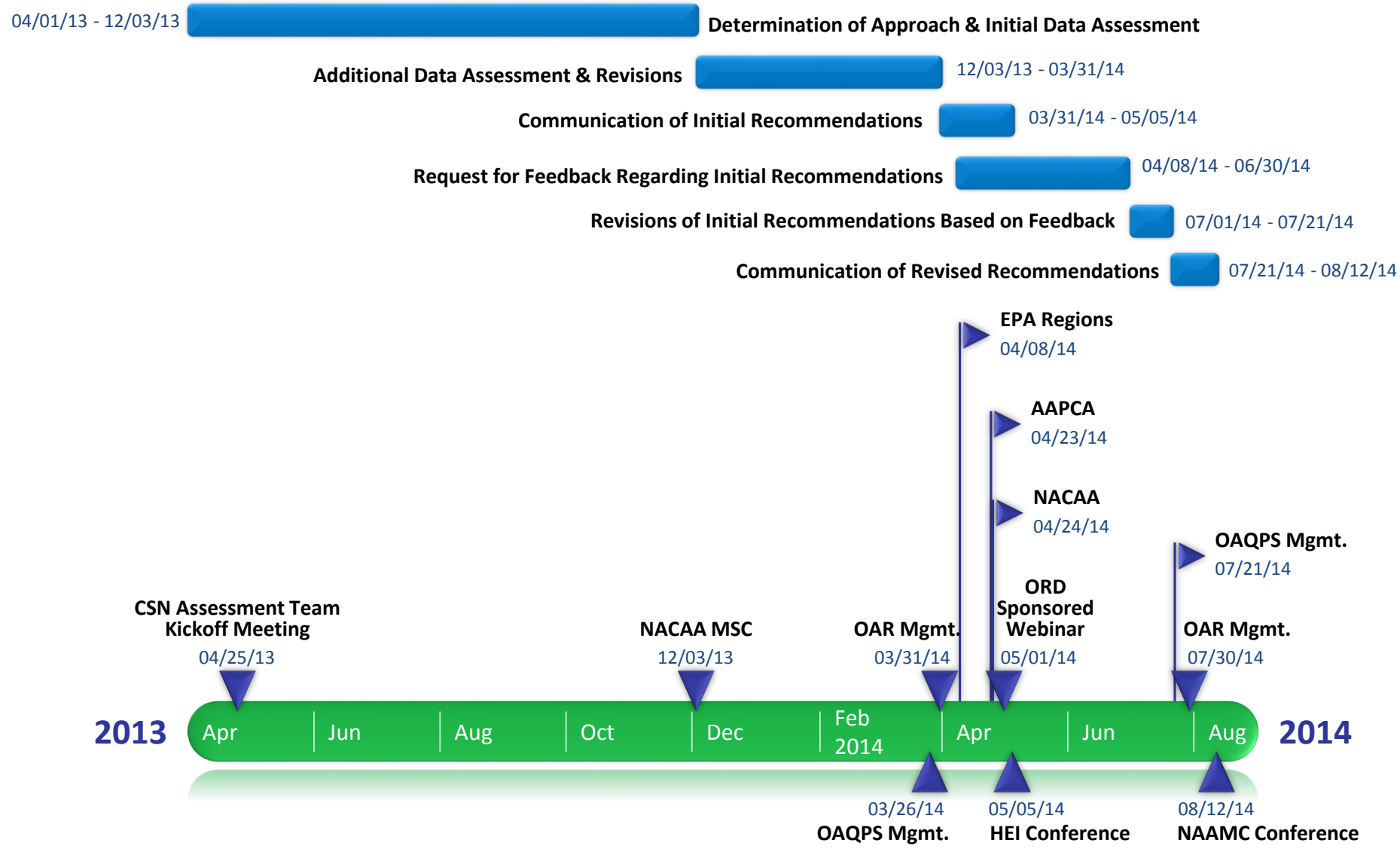
These are current numbers for the network, and will be contingent on future contract costs

Assessment Approach

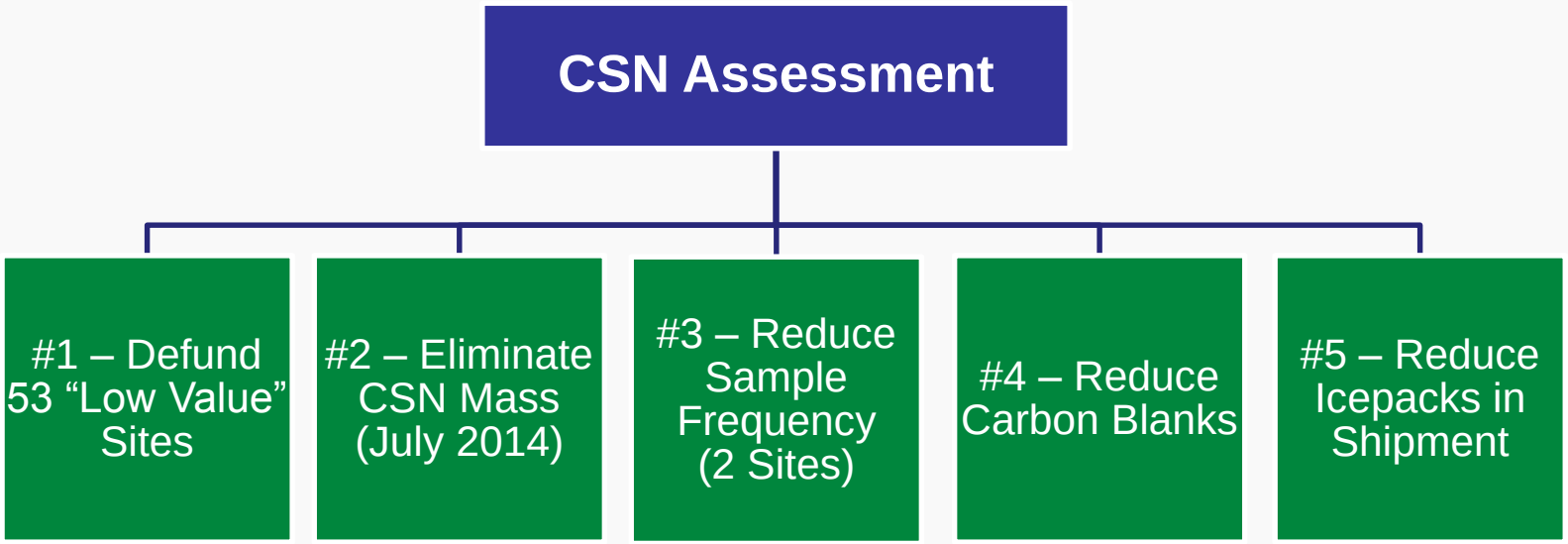
- An objectives based approach was taken in an effort to optimize the network to support the primary objectives, which include:
  - Support of $PM_{2.5}$ Implementation (e.g., SIPs, non attainment areas, control strategies, model development, etc.)
  - Aid in interpretation of health studies
  - Detection of trends

- We are aware and sensitive to the fact that there are many secondary objectives of our CSN sites (e.g., urban increment, regional haze, etc)

Assessment Approach & Communication Timeline



Original Recommendations (April 2014)

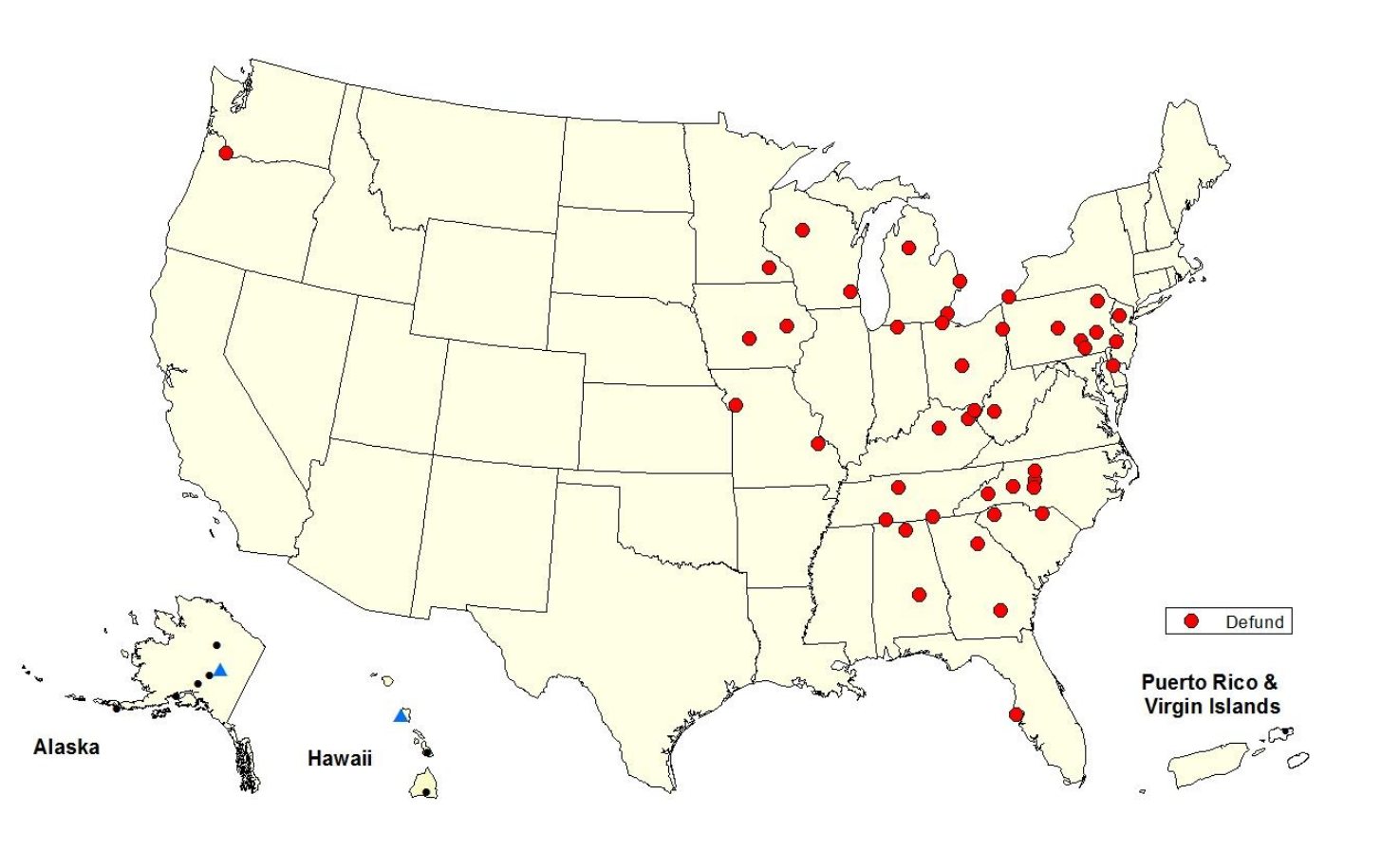


Recommendation #1 – Defund Sites

- Evaluated which sites meet the primary objective(s)
  - Points assigned for: NCore, design values, STN, health research city, daily FRM, continuous monitors, collocation (i.e. NATTS, PAMS & IMPROVE)
  - 73 sites *"Low Value"– more analysis necessary*
- Created decision matrix for 73 "low value" sites
  - Points assigned for: design value ranges, population, county emissions, proximity of speciation sites, species trends & correlation, and model bias/error
- Considering the decision matrix scoring and various intangibles, 53 "low value" sites were initially recommended for defunding*
- After incorporating feedback, 44 sites are scheduled for defunding in January 2015*

While sites recommended for defunding will no longer receive laboratory analysis funding, their speciation monitors may continue to operate if other funding sources are provided

Map of CSN Sites Recommended for Defunding



List of CSN Sites Recommended for Defunding

1. Huntsville Old Airport, AL
2. MOMS, AL
3. Dover, DE
4. Skyview, FL
5. Athens, GA
6. Douglas, GA
7. Linn County, IA
8. Public Health Building, IA
9. Elkhart Prarie Street, IN
10. Ashland Health Dept, KY
11. Grayson Lake, KY
12. Lexington Health Dept, KY
13. Houghton Lake, MI
14. Sterling Park, MI
15. Port Huron, MI
16. Rochester, MN
17. Liberty, MO
18. Bonne Terre, MO
19. Winston Salem, NC
20. Hickory, NC
21. Buncombe County, NC
22. Lexington, NC
23. Rockwell, NC
24. Camden, NJ
25. Chester, NJ
26. Toledo, OH
27. Head Start, OH
28. ODOT Garage, OH
29. Columbus, OH
30. Reading Airport, PA
31. State College, PA
32. Harrisburg, PA
33. Erie, PA
34. Scranton, PA
35. York, PA
36. Chesterfield, SC
37. Greenville ESC, SC
38. Lockeland School, TN
39. Lawrence County, TN
40. UTC, TN
41. VANNEVAN, WA
42. Perkinstown, WI
43. Waukesha, WI
44. S. Charleston Library, WV

Map of Speciation Network After Assessment (Jan 2015)

Recommendation #2 – Eliminate CSN Mass

- CSN $PM_{2.5}$ mass measurement widely used when the network was established
- Now, FRM $PM_{2.5}$ mass measurement widely used for model attainment, model evaluation, design values, etc.
- Originally recommended eliminating CSN $PM_{2.5}$ mass in July 2014
- After receiving comments, additional analysis conducted comparing the CSN and FRM $PM_{2.5}$ mass measurements (see Tim Hanley's poster)
  - CSN and FRM $PM_{2.5}$ mass measurements compare favorably
  - The FRM mass is the regulatory measurement
  - Reconstructed Fine Mass (RCFM) compared to FRM mass suitable approach to QC the FRM, and vice versa
  - CSN species and RCFM compared to historical CSN species and RCFM suitable approach to QC CSN species
- CSN $PM_{2.5}$ mass measurement now scheduled for elimination* in October 2014 (last samples to be collected September 29th)

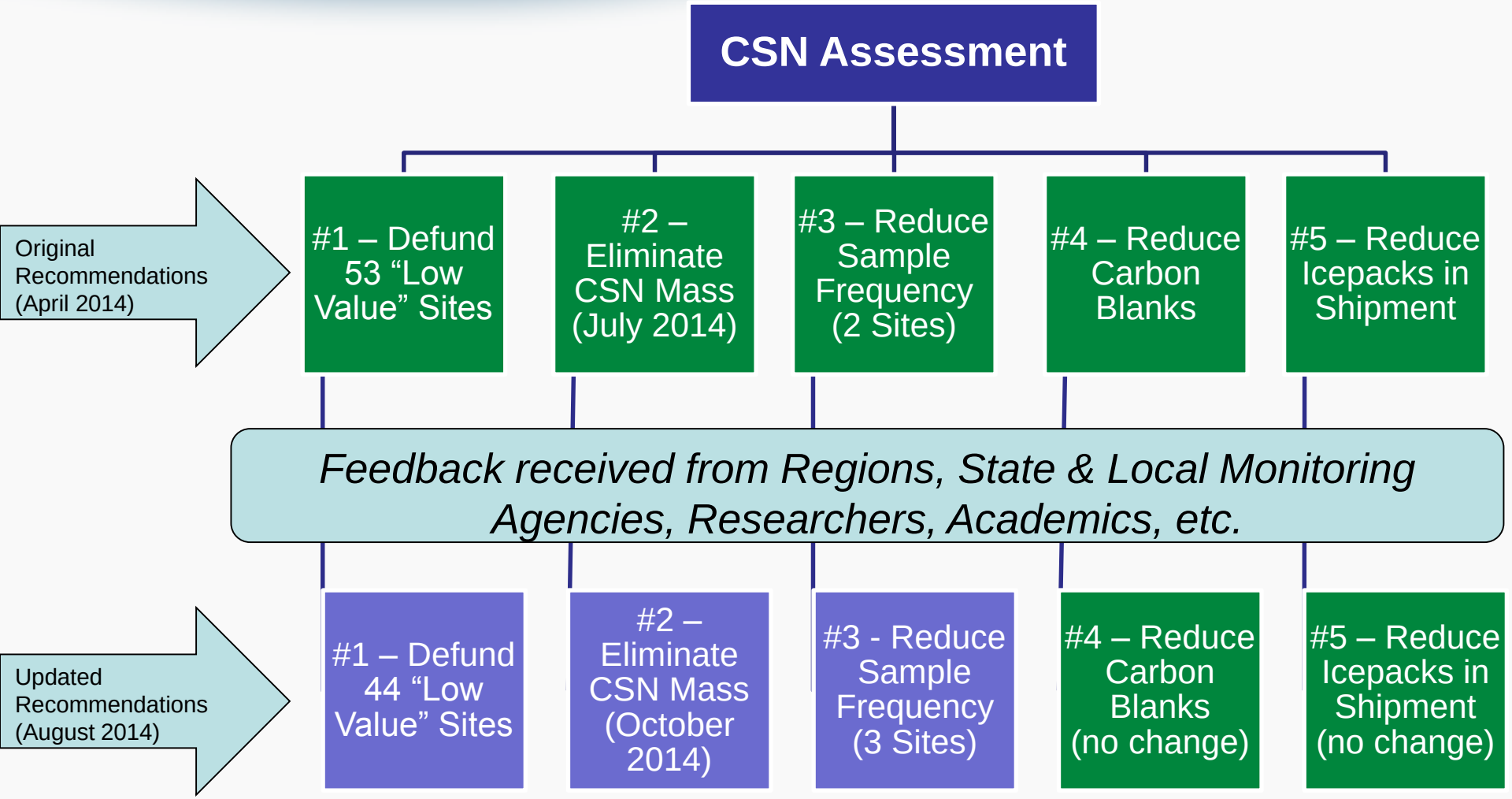
* Two sites recommended for funding do not have FRMs & will continue measuring CSN mass until such time as an FRM is established

Recommendation #3 – Reduce Sample Frequency

- Original recommendation to reduce sample frequency to 1-in-6 at sites that are not NCore or STN
  - Arnold West, MO
  - Wylam, AL
- After incorporating feedback, Arnold West, MO, Wylam, AL & Albany, NY are scheduled for a reduction in sample frequency to 1-in-6 beginning January 2015

Recommendations #4 & #5 (Reduce Carbon Blanks & Icepacks)

- Original recommendations:
  - Reduce carbon field blanks (from 10% to 5%)
  - Eliminate carbon backup filter blanks (currently 5%)
  - Reduce the number of icepacks included in sample shipments from 8 to 6 during the cooler months (October 1 – April 30)
- No feedback received justifying revisions
- Carbon field blanks will be reduced to 5%, carbon backup filter blanks will be eliminated, and the number of icepacks in shipment will be reduced to 6 beginning in January 2015


CSN Assessment
Original Recommendations (April 2014)
#1 – Defund 53 "Low Value" Sites
#2 – Eliminate CSN Mass (July 2014)
#3 – Reduce Sample Frequency (2 Sites)
#4 – Reduce Carbon Blanks
#5 – Reduce Icepacks in Shipment
Feedback received from Regions, State & Local Monitoring Agencies, Researchers, Academics, etc.
Updated Recommendations (August 2014)
#1 – Defund 44 "Low Value" Sites
#2 – Eliminate CSN Mass (October 2014)
#3 - Reduce Sample Frequency (3 Sites)
#4 – Reduce Carbon Blanks (no change)
#5 – Reduce Icepacks in Shipment (no change)

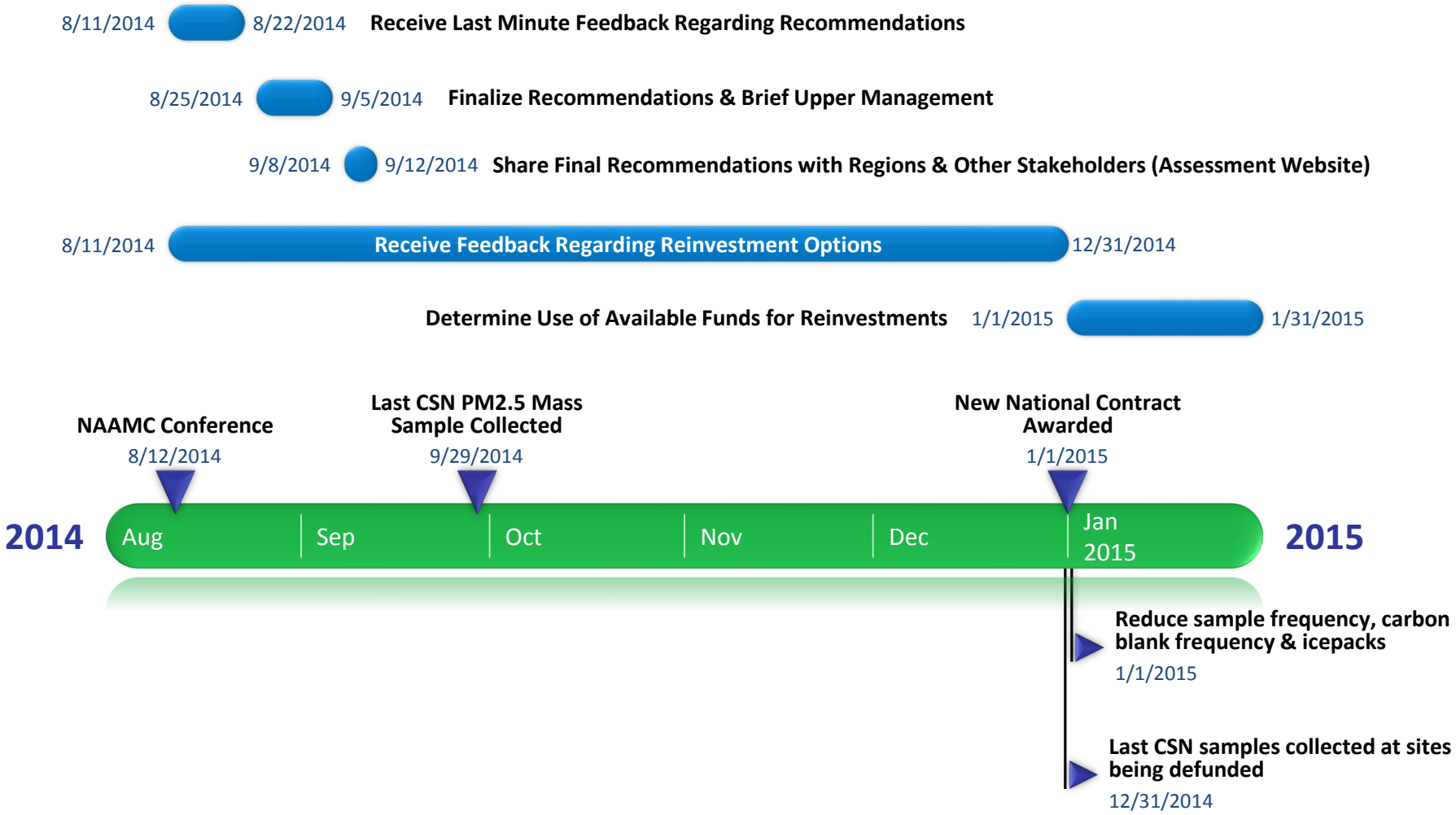
Reinvestments

- Original goal to have 10% ($670K) available for reinvestment in the network
- Taking feedback into consideration & based on current contract costs, we approximate $400K available for reinvestments
- The following investment options are being considered*:
  - Investigating new analytical techniques
  - SuperSASS upgrade at STN and/or NCore sites on Alternate 1:3 schedule
  - New sites in areas with emerging air quality issues
  - Continuous measurements (e.g., Sunset OC/EC, Aethalometer)
  - XRF & light absorption on daily FRM teflon filters
  - New measurement parameters

- We welcome input regarding reinvestment options for the network

**Final funds available for reinvestment will depend on the cost of the new contract*

Assessment Implementation Timeline



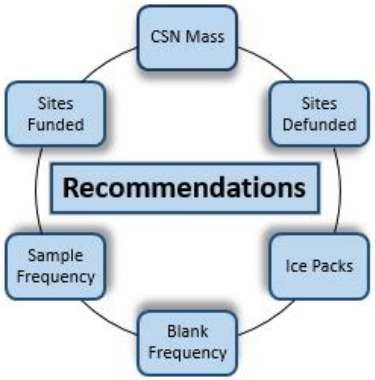
CSN Assessment Website

Chemical Speciation Network Assessment Interactive Website

Overview | Approach | Scoring | Decision Matrix | Q & A | Timeline | Acronyms

Welcome to the CSN Network Assessment Interactive Website.

Click here for information about how to use this website.



CSN Assessment Summary

- The following recommendations will become final in the next two weeks:
  - Defund 44 sites (to be implemented Jan. 2015)
  - Eliminate CSN $PM_{2.5}$ mass measurement (to be implemented Oct. 2014)
  - Reduce sample frequency at 3 sites (to be implemented Jan. 2015)
  - Reduce carbon blank frequency (to be implemented Jan. 2015)
  - Reduce icepacks in shipment (to be implemented Jan. 2015)

- **THIS IS THE FINAL CALL FOR PROVIDING FEEDBACK**

- *See Beth Landis at the CSN/IMPROVE Breakout Discussion Center for additional information about the assessment and to provide feedback (today from 3-5pm)*

Key Points

- The CSN network assessment recommendations incorporate feedback received from regional, state & local monitoring agencies, researchers and academics (as of August 8, 2014)

- Sites recommended for defunding will no longer receive laboratory analysis funding, however their speciation monitors may continue to operate if other funding sources are provided

- The cost breakdown and target savings numbers are contingent on current contract pricing (as of August 12, 2014) and are subject to change with the new contract (anticipated January, 2015)

- Further resource assessments will be necessary as contract costs and budgets change

Acknowledgements - CSN Assessment Team

- Beth Landis, Joann Rice, Lew Weinstock & Tim Hanley – OAQPS air monitoring
- Adam Reff, Neil Frank & Liz Naess- OAQPS air quality analysis
- Tesh Rao – OAQPS emissions inventory
- Jim Kelly – OAQPS modeling
- Beth Palma – OAQPS policy
- Beth Hassett-Sipple – OAQPS standards
- Alan VanArsdale – Region 1 air monitoring
- Daniel Garver – Region 4 air monitoring
- Rich Poirot - National Association of Clean Air Agencies (NACAA)

QUESTIONS?